

## **Social Skills Deficits Among the Socially Anxious: Rejection from Others and Loneliness<sup>1</sup>**

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*Based on evidence linking social anxiety with social skills deficits, it was hypothesized that socially anxious individuals would exhibit diminished social skills in a naturalistic interaction, relative to socially nonanxious persons, and that they would also elicit rejection from their conversational partners and experience loneliness. Socially anxious and nonanxious persons were surreptitiously videotaped while they waited with partners for an experiment to begin. Analyses of subjects' social skills indicated that, behaviorally, the socially anxious appear very similar to their nonanxious peers. At the same time, however, they exhibited a tendency to negatively misperceive their own social skills. Although socially anxious persons did not elicit significantly more rejection from their conversational partners, they did report being more lonely than nonanxious persons. Socially anxious subjects were also rated by their conversational partners as lower in social skill than were nonanxious subjects. Implications for further study of social skills among the socially anxious are discussed.*

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Social anxiety is an especially common phenomenon (Buss, 1980; Leary, 1982) that carries with it a number of debilitating consequences such as

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arrested development of interpersonal relationships (Arkowitz, Hinton, Perl, & Himadi, 1978), depression (Alden & Phillips, 1990), and alcoholism (Kraft, 1971). One potential reason why some people chronically experience social anxiety is that they lack the necessary social skills to effectively handle a variety of interpersonal encounters (Curran, 1977). Social skills are generally assumed to involve the ability to communicate effectively and appropriately with others (e.g., McFall, 1982; Trower, 1982). Indeed, relative to their nonanxious peers, socially anxious people engage in fewer social interactions (Dodge, Heimberg, Nyman, & O'Brian, 1987), are less assertive (Alden & Phillips, 1990), exhibit disrupted turn taking during social interactions (Cappella, 1985), and are perceived by others to be less socially skilled (Beidel, Turner, & Dancu, 1985).

In addition to often exhibiting deficits in socially skilled behaviors, socially anxious people generally harbor expectations that they will be rejected and devalued by their conversational partners (Clark & Arkowitz, 1975; DePaulo, Epstein, & LeMay, 1990; Leary, Kowalski, & Campbell, 1988). Even when others offer positive evaluation and feedback, the socially anxious tend to be suspicious and doubt the accuracy of such information (Arkin & Appelman, 1983; Lake & Arkin, 1985). If, in fact, socially anxious persons exhibit social skills deficits, it is reasonable to suspect that they *will* be rejected by others since socially unskilled behavior is often met with interpersonal rejection (Segrin, 1992), whereas skilled behavior tends to elicit acceptance and support from others (Cohen, Sherrod, & Clark, 1986; Cole & Milstead, 1989; Riggio & Zimmerman, 1991).

Despite the certainty among the socially anxious that they are (or will be) rejected by others, the veracity of this expectation has received little empirical attention. In one investigation, students who had subclinical levels of general anxiety were not rejected by their conversational partners any more than nonanxious controls (Dobson, 1989). However, when students watched an actor playing the role of an anxious person in a mock interaction, they reacted with rejection and devaluation (Gurtman, Martin, & Hintzman, 1990). Although informative, neither of these investigations assessed the reactions of partners following a real social interaction with a *socially* anxious target. As Schacter's (1959) research demonstrated, when people become anxious they often increase their sociability. It is only when the source of the anxiety is other people that anxious persons decrease their sociability (e.g., Dodge et al., 1987; Leary, Atherton, Hill, & Hur, 1986). This may be one reason why anxious subjects in the Dobson study were not rejected by their partners.

Results of two recent studies yield suggestive support for the proposition that social anxiety may lead to interpersonal rejection (Johnson & Glass, 1989; Vernberg, Abwender, Ewell, & Beery, 1992). Each of these

studies assessed some components of interpersonal rejection experienced by a sample of adolescents and found positive and significant relationships with their level of social anxiety.

If socially anxious actors exhibit poor social skills, and consequently elicit interpersonal rejection, it is plausible to assume that many socially anxious persons should therefore experience a number of long-term interpersonal difficulties. For example, one might hypothesize that socially anxious persons would experience loneliness (Solano & Koester, 1989). In fact, some evidence indicates that the loneliness is a correlate of social anxiety (e.g., Inderbitzen-Pisaruk, Clark, & Solano, 1992).

There are several reasons why social anxiety and loneliness may covary. First, socially anxious people may be less likely to approach and interact with others. Consequently, they may experience difficulty in establishing and maintaining interpersonal relationships. This could ultimately lead to a discrepancy between their actual versus desired level of social contact, i.e., loneliness. Second, if socially anxious people exhibit poor social skills, other people may react with rejection and disapproval. Such a state of affairs would be equally disruptive to the socially anxious person's attempt to establish and maintain satisfying interpersonal relationships. Therefore, it is reasonable to assume that the socially anxious would experience more loneliness than the nonanxious (Anderson & Harvey, 1988; Solano & Koester, 1989).

According to Schlenker and Leary's (1982) self-presentational model, social anxiety arises when a person is motivated to leave a good impression on others, but feels that (s)he will not be able to do so. Ironically, many studies on social anxiety may artificially escalate subjects' self-presentational goals, and thus enhance the anxious subjects' experience of anxiety. The vast majority of our existing knowledge on the relationship between social skills and social anxiety is based on studies in which participants are aware that their social behaviors will be evaluated by others (e.g., Arkin & Appelman, 1983; DePaulo et al., 1990) and that their social interactions will be observed or videotaped. Presumably, any individual's concern over his or her self-image would be considerably enhanced by the knowledge of being observed, videotaped, and/or evaluated. Furthermore, there can be little question that when subjects know they are being observed they often alter their behaviors, a phenomenon commonly referred to as the Hawthorne effect (Roethlisberger & Dickson, 1939).

An additional feature of many interactional studies on social anxiety is that subjects are often given clear instructions or goals for the interaction (e.g., "get acquainted," "answer questions from an interviewer," etc.). Leary and his colleagues clearly demonstrated that instructing subjects to seek information from their conversational partners has the effect of reducing

their anxiety and raising their confidence during interactions (relative to those who were given no explicit instructions) because this provides some structure to their encounters (Leary, Kowalski, & Bergen, 1988; see also Frisch & Higgins, 1986).

The use of assessment methods that give subjects instructions on how to behave in a social interaction have been referred to as "role plays" and have been the source of considerable controversy (e.g., Bellack, Hersen, & Lamparski, 1979; Bellack, Hersen, & Turner, 1978; Torgrud & Holborn, 1992). We concur with Becker and Heimberg (1988) in noting that the appropriate question may not be whether or not the role play method is valid, but rather, what can we learn from role plays? At the same time, however, there exists irrefutable empirical evidence that at least some role plays produce behaviors and impressions that differ from more naturalistic *in vivo* assessments (e.g., Bellack, Hersen, & Lamparski, 1979; Bellack, Hersen, & Turner, 1978, 1979; Frisch & Higgins, 1986; Greenwald, 1977). Since our existing knowledge base on the relationship between social skills and social anxiety is based almost entirely on studies that employed either self-reports, role play interactions, and/or interactions in which participants had knowledge that they were being observed, the need for studies with more naturalistic assessment platforms becomes obvious.

As noted by Ickes, Bissonnette, Garcia, and Stinson (1988), the above mentioned design features of many interactional studies have led to the need for experimental paradigms that

provide a context for the emergence of spontaneous, naturalistic interaction behavior on the part of two or more naive subjects. Such spontaneous, naturally occurring behavior should contrast sharply with the behavior observed in "fixed confederate" paradigms or in paradigms in which subjects are instructed to interact with the prior knowledge that their behavior during the interaction will be recorded and subsequently analyzed. (p. 18)

It was therefore considered essential in this investigation to secure a sample of subjects' communication behaviors without explicitly instructing them to interact with each other or informing them that their behaviors would be either observed, recorded, or evaluated. Since social skill is a multidimensional construct, it was also deemed necessary to utilize a multitrait multimethod assessment procedure.

### *Hypotheses*

The hypotheses of this investigation were centered around the relationship between social anxiety and (1) social skills, (2) interpersonal rejection, and (3) loneliness. Since rejection and loneliness were assumed to

be consequences of social skills deficits among socially anxious actors, the first hypothesis of this investigation was:

H<sub>1</sub>: Socially anxious persons will score lower on measures of social skills than will nonanxious persons.

Some evidence indicates that socially anxious persons expect to be rejected by others and that they exhibit a tendency to negatively evaluate themselves, perhaps due to low self-esteem (Lake & Arkin, 1985; Patterson, Churchill, & Powell, 1991). This suggests that, when evaluating their own social skills, socially anxious persons may give overly negative evaluations of themselves. This could lead to the erroneous conclusion that anxious persons are deficient in social skills when in fact these reported "deficits" are an artifact of a negative self-evaluation bias. Although socially anxious persons have been shown to be overly negative in their self-evaluations following their public performances of brief speeches (Rapee & Lim, 1992), it was not clear whether this tendency would generalize to dyadic interactions that are less public and less evaluative, and in which there is no knowledge of being observed by anyone other than a conversational partner. Therefore, the following research question was posed:

RQ<sub>1</sub>: Are socially anxious people's self-evaluations of their social skills overly negative relative to the evaluations of others who interact with them?

Since socially anxious persons commonly expect to be rejected by others, it was desirable to evaluate whether this was in fact the case. Because of the noted association between social skills deficits and social anxiety, and the fact that social skills deficits have been linked to rejection from others, we hypothesized the following:

H<sub>2</sub>: Social anxiety and social skills will predict rejection from others such that the more social anxiety subjects experience and the less social skill they exhibit, the more rejection their partners will report.

Finally, social anxiety was assumed to lead to loneliness largely because of the byproducts of social skills deficits, assumed to be inherent among the socially anxious, such as diminished initiation of social contact and rejection from others. Consequently, we hypothesized the following:

H<sub>3</sub>: Social anxiety and social skills will predict loneliness such that, the more social anxiety subjects experience and the less social skill they exhibit, the more loneliness they will report.

## METHOD

### *Subjects*

During the first week in the semester, 1245 introductory psychology students at a large midwestern university were administered the Social Reti-cence Scale (SRS; Jones & Briggs, 1986), along with several other scales not relevant to this report. Approximately 8 to 10 weeks later, subjects whose SRS scores were in the upper or lower quartiles of the distribution (SRS scores greater than 55 or less than 39, respectively; scale range = 20 to 100) from the initial pool were invited to participate in a study on "video ratings" in exchange for extra credit toward their course grades. Upon ar-riving at the lab, subjects were again administered the SRS and had to again score in the 55 or 39 range to be included in the study. Twenty-two potential subjects were eliminated at the time of this second screening. The final sample included 64 subjects with a mean age of 20.8, composed of 43% males and 57% females. The mean SRS score for the socially nonanx-ious group was 30.8 (SD = 5.3,  $n = 33$ ), and 68.1 (SD = 9.4,  $n = 31$ )<sup>3</sup> for the socially anxious group,  $t(63) = 19.95$ ,  $p < .001$ , effect size ( $r$ ) = .93. The socially anxious group included 14 males and 17 females, while the nonanxious group was comprised of 13 males and 20 females.<sup>4</sup>

### *Partners*

Each subject (those screened for social anxiety) who participated in the study was randomly paired with a partner for the interaction task. This random pairing procedure produced 12 male-male (MM) dyads, 19 female-female (FF) dyads, 15 male subject, female partner (MF) dyads, and 18 female subject, male partner (FM) dyads. The partners were students drawn from communication courses who participated in exchange for extra

<sup>3</sup>For some analyses  $N$ s are slightly reduced due to missing data.

<sup>4</sup>Although gender was not part of the theoretical propositions or hypotheses of this study, for those who may be interested we sought to determine if sex differences existed. A series of  $2 \times 2$  analyses of variance (ANOVAs) were conducted to evaluate all of the social skills measures for differences as a function of subject sex (male/female), partner sex (same/opposite), and the interaction between the two. These analyses revealed no significant main effects for subject sex [ $F(1, 63) < 2.05$  for all, n.s.], same versus opposite sex partner [ $F(1, 63) < 3.78$  for all n.s.], nor any significant interactions between the two factors [ $F(1, 63) < 3.18$  for all, n.s.]. Since this study concerned the relationship between social skills and social anxiety, we also examined sex differences in the association between these two classes of variables by correlating each of the 10 social skill variables with social anxiety for males and for females. None of the 10 male-female correlation pairs differed significantly from each other ( $z < 1.70$  for all, n.s.). Therefore, subject sex was dropped from all subsequent analyses.

credit toward their course grades. They were strangers to the subjects and were blind to the hypotheses of the study. The 64 partners had a mean age of 21.6 years, with 44% males and 56% females. Partners' mean score on the Social Reticence Scale was 43.46 ( $SD = 9.23$ ) on a scale that ranged from 20 to 100. Partners' scores on this scale correlated  $r = -.01$  with those of the subjects, indicating a fairly random distribution of partner anxiety throughout the dyads.

### *Measures*

*Social Anxiety.* Upon arriving at the lab subjects were administered the Social Reticence Scale (Jones & Briggs, 1986) to assess their current level of social anxiety. The Social Reticence Scale is a 20-item instrument that measures trait-like social anxiety ( $\alpha = .93$ ), with items such as "I frequently have difficulties in meeting people," and "I have a hard time expressing my opinions to others." It has demonstrated good concurrent validity, correlating significantly (in the .50 to .80 range) with numerous other measures of social anxiety and sociability (Jones, Briggs, & Smith, 1986; Montgomery, Haemmerlie, & Edwards, 1991) and with judges' ratings of anxiety during social interactions (Jones & Carpenter, 1986). This scale was administered to subjects before the interaction because we felt that scores could have been influenced by knowledge of having just been surreptitiously videotaped had it been administered after.

The following measures were administered *after* the naturalistic interaction task.

*Self-Rated Social Skill.* Subjects completed the Self-Rated Competence Scale (Cupach & Spitzberg, 1981; see also Spitzberg, 1988) as an index of the level of social skills they exhibited during the interaction. This 27-item scale contains statements that describe and evaluate one's effectiveness and skill in a particular conversation. Sample items include "I expressed myself clearly," "I was awkward in the conversation," "I was supportive," and "I showed an interest in the conversation" ( $\alpha = .91$ ).

*Partner-Ratings of Subjects' Social Skills.* Each *partner* gave his or her impression of the subject's social skills with Cupach and Spitzberg's (1981) Rating of Alter Competence Scale (see also Spitzberg, 1988;  $\alpha = .91$ ). This scale includes items such as "S/he was easy to confide in," "S/he paid attention to the conversation," and "S/he ignored my feelings."

*Global Ratings of Social Skill.* In addition to subjects' self-reports of their social skill, and partners' evaluations of subjects' social skills, four raters watched the videotaped interactions, and made a global rating of

each subject's social skills by responding to the statement: "This person is socially skilled" on a 5-point scale ( $\alpha = .89$ ).

*Behavioral Measures of Involvement.* As an index of subjects' degree of involvement in the conversations, a number of behaviors that are indicative of conversational involvement (Cocker & Burgoon, 1987) were assessed from the video record of the conversations. In particular, *talk time* (interrater reliability  $\alpha = .98$ ), *number of speaking turns* ( $\alpha = .81$ ), *gaze frequency* ( $\alpha = .87$ ), *gaze duration* ( $\alpha = .98$ ), *gesture (object-focused) frequency* ( $\alpha = .97$ ), *gesture duration* ( $\alpha = .95$ ), and duration of *silence* ( $\alpha = .94$ ) were assessed for each subject. While these behaviors are indicative of conversational involvement, they also have been related to overall social skills in numerous past investigations (e.g., Conger & Farrell, 1981; Dillard & Spitzberg, 1984; Segrin, 1992; see also Glass & Arnkoff, 1989). Two trained coders tabulated the frequency and duration of each behavior with the assistance of a computer program that responds to the press of a particular button whenever the behavior is "on." Coders took a separate pass through the video records for the entire 5 min of each conversation for each behavior (talk, gaze, gesture, etc.). The average score of the two coders was used in subsequent analyses.

*Loneliness.* The UCLA Loneliness Scale (version 3; Russell & Catrona, 1988; Russell, Peplau, & Ferguson, 1978) was administered to assess subjects' current level of loneliness ( $\alpha = .91$ ). Sample items include "How often do you feel that you lack companionship," and "How often do you feel that no one really knows you well?"

*Rejection.* As a measure of interpersonal rejection, *partners* completed a slightly expanded version of Coyne's (1976) Willingness to Engage in Future Interaction scale for each person, to assess the degree to which they reacted to the subjects with rejection. This 11-item measure contains questions such as "Would you be willing to work with this person on a job?" and "Would you be willing to admit this person to your circle of friends?" Subjects responded to each question on a 5-point Likert scale ( $\alpha = .91$ ). Since it was assumed that rejection should also be evident behaviorally, through diminished conversational involvement, the same involvement behaviors that were assessed from subjects, namely *talk time* (interrater reliability  $\alpha = .84$ ), *number of speaking turns* ( $\alpha = .93$ ), *gaze frequency* ( $\alpha = .98$ ), *gaze duration* ( $\alpha = .98$ ), *gesture (object-focused) frequency* ( $\alpha = .95$ ), and *gesture duration* ( $\alpha = .98$ ) were assessed for each partner in the same method as for the subject behaviors.

*Speech Content Analysis.* Although the relationship between social skills and speech content is poorly understood, there is reason to believe that social skill is manifest to some extent through linguistic behaviors (Bradac, Davies, Courtright, Desmond, & Murdock, 1977; Conger, Wallander, Mariotto, &



Ward, 1980), and that anxious and nonanxious subjects may differ on these behaviors (Leary, Knight, & Johnson, 1987). Analyses of linguistic behaviors involved several sets of measures. First, conversations were transcribed and their *basic linguistic structure* was analyzed with the Systematic Analysis of Language Transcripts (SALT) computer program (Miller & Chapman, 1993). These analyses examined the number of utterances, times the subject was interrupted, times the subject interrupted the partner, complete utterances, incomplete utterances, unintelligible or partially intelligible utterances, and total number of words. Unless otherwise noted, each of these variables was assessed from *subjects'* speech behavior. Next, transcripts were unitized into thought units (Blackwell, Galassi, Galassi, & Watson, 1985; Cacioppo & Petty, 1981) by three trained coders. A thought unit is a complete thought within a single utterance that is expressed linguistically. Each coder unitized two-thirds of the total set of transcripts. Their average unitizing reliability as indexed by Guetzkow's  $U$  was .08, indicating 8% disagreement. These disagreements were resolved through discussion.

The thought units were subsequently analyzed with three different coding schemes. They were first coded for *form of grammatical structure* with a scheme developed by Rogers and Farace (1975). The categories in this scheme are assertion, question, talk-over, noncomplete thought, and other (uncodable). Three coders each coded two-thirds of the total set of transcripts with an average reliability, as calculated by Cohen's kappa, of  $\kappa = .60$ . Fleiss (1981) described kappas between .60 to .75 as "good" reliability. Next, the transcripts were coded for *response mode*, also from the Rogers and Farace scheme. This coding task involved classifying the nature of the response to the partner, as indicated by each thought unit, as support, non-support, extension, answer, instruction, order, disconfirmation, topic change, initiation-termination, other (average intercoder reliability,  $\kappa = .69$ ). Finally, subjects' speech was coded for evidence of *tension* with a scheme developed by Mishler and Waxler (1968) that assesses incomplete thoughts, word and sound repetitions, fragments, and laughter. For this coding, three coders counted the total number of thought units indicative of each different type of tension, and the average of these three estimates was used in subsequent analyses. The coders' reliability for each category was as follows: incomplete thoughts,  $\alpha = .72$ ; word and sound repetitions,  $\alpha = .70$ ; fragments,  $\alpha = .55$ ; and laughter,  $\alpha = .78$ .

### *Procedure*

Upon arriving at the lab, the subject and his or her partner were escorted by a research assistant into a small room that contained two chairs

and a VCR with a monitor. They were told that we were interested in having them rate some persuasive interaction episodes that were to be presented on videotape, but that they were to first read and sign a consent form and complete a brief questionnaire (the Social Reticence Scale). After the subject and partner finished the questionnaire, the research assistant placed a videotape in the VCR only to discover that it was improperly labeled, and was thus the "wrong" tape. The research assistant then attempted to contact the "director" of the research study, who was in another part of the building, through an intercom that was in the room with the participants. After receiving no reply from the director of the study, the research assistant asked the participants if they would not mind waiting for a few minutes while (s)he went to the director's office to get the correct videotape. The research assistant then left the room for approximately 5 min.<sup>5</sup> During this period, the interaction between the subject and his or her partner was recorded with a small video camera that was concealed in a box, and several microphones that were concealed throughout the room. After 5 min, the research assistant returned to the room complaining that (s)he was unable to locate the director of the study with the correct tape, and asked the participants to complete an additional questionnaire while they waited for the arrival of the correct tape. After the subject and his or her partner completed the questionnaire, both were fully debriefed and thanked for their participation.

## RESULTS

The initial hypothesis guiding this study was that socially anxious persons would exhibit less social skill than their nonanxious counterparts ( $H_1$ ). Subjects' social skill was assessed in this study through self-reports, partner-ratings, global third-party ratings, and behavioral involvement. To evaluate this hypothesis the means for the anxious and nonanxious groups were compared for all of the social skills variables. The results of these analyses

<sup>5</sup>Despite the fact that it was our goal to place dyads in an unstructured social situation, without any explicit instructions to interact, it is possible that the manipulation (i.e., the experimenter who brought the "wrong" tape to the lab) may have provided subjects with a topic for conversation, thus facilitating the initiation of social interaction. To evaluate this possibility, a coder was instructed to view the entire 5-min interaction for all dyads and tabulate if, when, and for how long subjects discussed any aspect of the protocol (e.g., foolish experimenter, wrong tape, etc.). Out of the 64 dyads, only four made any mention of the experimental ploy. For all of these four dyads, this topic of discussion lasted less than 10 sec, and for three of the four dyads the topic was initiated after 4:20 into the 5-min interaction. The possibility that the experimental manipulation provided subjects with a topic on which to start a discussion was ruled out by these analyses.

Table I. Anxious and Nonanxious Means for Measures of Social Skill and Behavioral Involvement (Standard Deviations in Parentheses)

	Nonanxious ( <i>n</i> = 31)	Anxious ( <i>n</i> = 33)	<i>t</i>	Effect size ( <i>r</i> )
	Social Skill			
Self-rated competence (scale 27 to 135)	107.9 (11.3)	91.9 (11.5)	5.52 <sup>b</sup>	.58
Partner-rated competence (scale 17 to 85)	64.1 (7.8)	60.1 (10.7)	1.68 <sup>a</sup>	.21
Global ratings of social skills (scale 1 to 5)	3.6 (1.0)	3.3 (1.0)	0.76	.10
	Behavioral involvement			
Talk time (sec)	52.0 (59.4)	38.5 (40.7)	1.05	.13
Number of speaking turns	18.5 (19.1)	18.0 (18.0)	0.15	.02
Gaze frequency (per 5 min)	13.9 (13.9)	15.7 (14.7)	-0.56	-.05
Gaze duration (sec)	69.0 (73.1)	70.5 (69.9)	-0.08	-.01
Gesture frequency (per 5 min)	2.3 (2.9)	2.2 (2.6)	0.02	.00
Gesture duration (sec)	6.5 (12.7)	5.9 (12.6)	0.16	.02
Silence (sec)	129.9 (120.6)	167.1 (116.7)	1.25	.16

<sup>a</sup>*p* < .05, one-tailed.

<sup>b</sup>*p* < .001, one-tailed.

are presented in Table I. With a sample of this size the power to detect an effect of  $r = .20$  was .35, and .91 to detect an effect of  $r = .40$ .

The most notable feature of these results is the exceptionally large difference between socially anxious and nonanxious subjects on self-reports of social skills. Despite the fact that there were no significant differences between the two groups among the actual conversational involvement behaviors that were assessed, the socially anxious subjects rated their own social skills much more negatively than the nonanxious subjects did. It is equally interesting to note that partners rated the social skills of anxious subjects more negatively than nonanxious subjects, although third-party observers did not make this distinction between the two groups. In summary,  $H_1$  received mixed support: socially anxious subjects scored lower on self-

reports and partner ratings of social skill, but not on global third-party ratings of social skill, nor any of the behaviors that were assessed.

To estimate the extent to which partners' social anxiety and social skills had an impact on subjects' social skills, partners were asked to complete the SRS and Self-Rated Competence Scale. Partners' scores on the SRS correlated significantly with only one of the 10 subject social skill variables, silences,  $r(63) = -.23, p < .05$ ; all other  $r$ s  $< .15$ , n.s. This finding is perhaps to be expected since silence is a variable that is actually an amalgamation of a subject and partner behavior. Partners' self reported competence correlated significantly with subjects' number of speaking turns,  $r(57) = .27, p < .05$ , and gaze duration,  $r(56) = .27, p < .05$ ; all other  $r$ s  $< .21$ , n.s. Although partners' social anxiety appeared to have no impact on subjects' demonstrations of social skills, partners' social skills did appear to have had a moderate influence on some of the subjects' social behaviors.

To further explore the nature of anxious and nonanxious subjects' social skills, their speech content was analyzed. The first analysis involved an examination of the *basic linguistic structure* of subjects' speech, by treating each variable (see measures section for list) as a dependent measure in a multivariate analysis of variance (MANOVA) with subject anxiety (anxious/nonanxious) as the independent variable. Results of this analysis indicated no differences on any of the seven dependent measures as a function of subjects' anxiety, Wilks's  $\lambda = .89, F(7, 56) = 0.94$ , n.s.

The next step in the analysis of subjects' speech content involved analyzing anxious–nonanxious differences in the *form of the grammatical structure* of each thought unit, with a MANOVA where each of the five form categories was treated as a dependent measure. The results of this analysis yielded no significant anxious–nonanxious differences in the frequency of assertions, questions, talk-overs, noncomplete thoughts, or “other” occurrences, Wilks's  $\lambda = .91, F(5, 58) = 1.11$ , n.s.

A similar MANOVA was used to compare anxious and nonanxious subjects on *response mode*. Since there were no instances of the “order” (i.e., command) category in any of the transcripts, that variable was dropped from the list of dependent measures. This analysis revealed a significant effect for subjects' anxiety level, Wilks's  $\lambda = .71, F(9, 54) = 2.50, p < .05$ . *Post hoc* univariate analyses indicated that the socially anxious subjects gave more “answers” (mean = 3.18) than their nonanxious counterparts (mean = 1.77),  $t(62) = -2.35, p < .05$ . Differences on the remaining eight response mode categories (i.e., support, nonsupport, extension, instruction, disconfirmation, topic change, initiation–termination, other) were nonsignificant.

The final analysis of subjects' speech behaviors involved an analysis of anxious–nonanxious differences in instantiations of *tension* in their

speech. A MANOVA indicated that socially anxious and nonanxious subjects did not differ significantly on any of the four tension categories, i.e., incomplete thoughts, repetitions, fragments, and laughter, Wilks's  $\lambda = .96$ ,  $F(4, 59) = 0.69$ , n.s.

Research question one asked whether socially anxious persons were overly negative in their self-evaluations of social skills relative to others' evaluations. To answer this question, subjects' self reports of social skills were compared with the evaluations from their interaction partners. This task was particularly facilitated by the similarity between the Self-Rated Competence Scale and the Rating of Alter Competence Scale administered to subjects and their partners, respectively. Since these two scales have a different number of items, the first step in this analysis was to convert the scores on each scale to z-scores. Next, a discrepancy score was created for each subject that was the difference between his or her z-score for self-rated social skills, and the z-score for the partner's rating of his or her social skills.

The results indicated that, as a group, the socially anxious tended to evaluate themselves more negatively than their partners did (mean discrepancy  $z = -.60$ ), whereas the nonanxious group slightly *overestimated* their own social skills relative to their conversational partners' estimations (mean discrepancy  $z = 0.23$ ). The difference between the z-score mean discrepancies of each group indicates that, when comparing them to the socially nonanxious, socially anxious persons are overly negative in their self-reports of social skills relative to the reports of those who interacted with them,  $t(59) = 3.30$ ,  $p < .01$ , effect size ( $r$ ) = .39.

Hypothesis 2 predicted that subjects' social anxiety would elicit interpersonal rejection from their partners at least in part due to the defects in social skills hypothesized to be associated with social anxiety. To evaluate this hypothesis a hierarchical multiple-regression analysis was conducted with partners' reported rejection as the dependent variable, and subjects' social anxiety and social skills as the independent variables. Since it was likely that some of the subject social skill variables were correlated, a zero-order correlation matrix of the independent variables was first examined. A decision was made to eliminate *global ratings of social skills*, *number of speaking turns*, and *gaze frequency* from subsequent regression analyses since they correlated on average  $r = .60$  or greater with the other independent variables. Consequently, this hypothesis was evaluated with a hierarchical multiple-regression analysis in which social anxiety was entered on the first step (dummy coded as 0 = *nonanxious*, 1 = *anxious*), followed by all of the social skills variables (i.e., self-reported competence, partner-rated competence, and the remaining behavioral measures of involvement entered

**Table II. Zero-Order Correlations and Regression Coefficients for Predictors of Interpersonal Rejection<sup>a</sup>**

Predictor variable	<i>r</i>	Beta	<i>t</i>
Social anxiety	.07 <sub>a</sub>	.14	-1.58
Self-rated competence	-.34 <sup>b</sup>	-.14	-1.52
Partner-rated competence	-.82 <sup>c</sup>	-.82 <sup>c</sup>	-7.71 <sup>c</sup>
Speaking turns	-.41 <sup>c</sup>	.07	0.55
Gaze duration	-.54 <sup>c</sup>	-.13	-0.94
Gesture frequency	-.39 <sup>b</sup>	.15	1.12
Gesture duration	-.31 <sup>b</sup>	-.02	-0.21
Silence	.47 <sup>c</sup>	.01	0.11
<i>R</i>		.83***	
<i>R</i> <sup>2</sup>		.70***	

<sup>a</sup>Subscript <sub>a</sub> indicates a point biserial correlation coefficient.

<sup>b</sup>*p* < .01.

<sup>c</sup>*p* < .001.

on the second step as a block. The results of this analysis appear in Table II.

The nonsignificant beta weight for social anxiety indicates that, counter to hypothesis 2, subjects' social anxiety was not predictive of rejection from partners (although the relationship was in the hypothesized direction). However, as predicted, partners showed a powerful tendency to reject subjects who exhibited poor social skills. Partner rejection was significantly correlated with every social skill variable assessed in this study, regardless of how it was operationalized. It should be noted, however, that several social skill variables may not have emerged as significant predictors of partner rejection in the regression equation because there remained some degree of intercorrelation (i.e., multicollinearity) among these variables. The combination of subjects' social anxiety and social skills explained 70% of the variance in rejection from partners. Overall, subjects' social skills were a far more powerful predictor of rejection from partners than was their social anxiety, thus only partially confirming H<sub>2</sub>.

As a further evaluation of hypothesis 2, the behaviors of partners who interacted with anxious versus nonanxious subjects were compared. These comparisons were predicated on the assumption that partners' rejection of anxious subjects should be evident through their diminished exhibition of behavioral skills (i.e., involvement) in the interactions. The results of these analyses appear in Table III and indicate that, counter to H<sub>2</sub>, there were no differences in the behaviors of partners who interacted with anxious

Table III. Means of Behavioral Involvement Measures for Partners of Anxious versus Nonanxious Subjects<sup>a</sup>

Behavior	Partners of nonanxious subjects (n = 31)	Partners of anxious subjects (n = 33)	t	Effect size (r)	Correlation with self-reports of rejection (r)
Talk time (sec)	73.6 (75.7)	72.8 (69.7)	0.05	.01	-.56 <sup>c</sup>
Number of speaking turns	11.1 (10.1)	12.5 (12.2)	-0.52	-.07	-.43 <sup>c</sup>
Gaze frequency (per 5 min)	13.4 (12.5)	16.3 (15.9)	-0.83	-.10	-.48 <sup>c</sup>
Gaze duration (sec)	70.9 (77.8)	70.9 (73.8)	0.00	.00	-.53 <sup>c</sup>
Gesture frequency (per 5 min)	3.9 (4.8)	5.0 (8.1)	-0.67	.08	-.33 <sup>b</sup>
Gesture duration (sec)	4.9 (7.3)	6.3 (10.8)	-0.59	.07	-.37 <sup>b</sup>
Silence (sec)	129.9 (120.6)	167.1 (116.1)	1.25	.16	.47 <sup>c</sup>

<sup>a</sup>Although silence is a combination of both a subject and partner behavior, the means are given here for purpose of comparison.

<sup>b</sup> $p < .05$ , one-tailed.

<sup>c</sup> $p < .01$ , one-tailed.

versus nonanxious subjects. It should be noted, however, that partners' behaviors were substantially correlated with their self-reports of rejection, supporting the reasoning that rejection is evident through diminished conversational involvement.

Finally,  $H_2$  was further explored with an analysis of partial variance. If the relationship between rejection and social anxiety is accounted for by social skill, then the association between rejection and social skill with anxiety partialled out should be larger than the association between rejection and anxiety with social skill partialled out. The results of these regression analyses support  $H_2$  as  $R^2_{\text{reject-skill.anx}} = .67$  and  $R^2_{\text{reject-anx.skill}} = .01$ , indicating that social skills are largely responsible for the observed relationship between anxiety and rejection.

Hypothesis 3 predicted that social anxiety would be positively associated with loneliness, again partly due to the social skills deficits hypothesized to be associated with social anxiety. This hypothesis was evaluated with a hierarchical multiple-regression analysis identical to the one con-

Table IV. Zero-Order Correlations and Regression Coefficients for Predictors of Loneliness<sup>a</sup>

Predictor variable	<i>r</i>	Beta	<i>t</i>
Social anxiety	.79 <sup>a</sup>	.69 <sup>c</sup>	7.68c
Self-rated competence	-.54 <sup>c</sup>	-.13	-1.44
Partner-rated competence	-.24 <sup>b</sup>	-.17	-1.62
Speaking turns	-.06	-.10	-0.83
Gaze duration	-.02	-.03	-0.22
Gesture frequency	.11	.24 <sup>b</sup>	2.08 <sup>b</sup>
Gesture duration	.12	.09	0.96
Silence	.12	-.03	-0.28
<i>R</i>		.84 <sup>c</sup>	
<i>R</i> <sup>2</sup>		.70 <sup>c</sup>	

<sup>a</sup>Subscript <sub>a</sub> indicates a point biserial correlation coefficient.

<sup>b</sup>*p* < .05.

<sup>c</sup>*p* < .001.

ducted to test H<sub>2</sub>; however, in this case, subjects' loneliness was the dependent variable. The results of this analysis appear in Table IV.

As evident from Table IV, the hypothesized association between social anxiety and loneliness was strongly supported ( $\beta = .69$ ,  $p < .001$ ). The more socially anxious subjects were, the more they reported experiencing loneliness. Counter to H<sub>3</sub>, subjects' social skills were, for the most part, not significant predictors of their loneliness, with the exception of gesture frequency ( $\beta = .24$ ,  $p < .05$ ). Although subjects' self-ratings of social skills correlated  $r = -.54$  with their reports of loneliness, when the variance shared with social anxiety was partialled out, self-rated social skill was not a significant predictor of social anxiety ( $\beta = -.13$ , n.s.). The combination of subjects' social anxiety and social skills explained 70% of the variance in their reports of loneliness, although the vast majority of this variance was explained by social anxiety, not social skills, thus partially supporting H<sub>3</sub>.

As with H<sub>2</sub>, H<sub>3</sub> was also evaluated with an analysis of partial variance. Even though the relationship between rejection and anxiety was not statistically significant, we chose to conduct a similar analysis of partial variance on this relationship, as conducted to evaluate H<sub>2</sub>, for purposes of comparison. If the relationship between loneliness and social anxiety is accounted for by social skill, then the association between loneliness and social skill with anxiety partialled out should be larger than the association between loneliness and anxiety with social skill partialled out. The results of regression analyses do not support H<sub>3</sub>, as  $R^2_{lonely-skill,anx} = .07$  and



$R^2_{\text{lonely-anx.skill}} = .37$ , indicating that social skills do not account for the relationship between anxiety and loneliness.

## DISCUSSION

The results of the present study indicate that when placed in unstructured social interactions, with no explicit instructions, and no knowledge of being observed, the social skills of socially anxious people appear similar to those of their nonanxious counterparts. One notable exception, however, is in socially anxious persons' self-evaluations of social skills, which appear to be somewhat unrealistically negative. Counter to prediction, socially anxious persons were not rejected by their partners significantly more than nonanxious subjects. However, social anxiety was strongly and positively associated with loneliness, as predicted.

Numerous past studies indicate that social anxiety is associated with problematic social skills (e.g., Beidel, Turner, & Dancu, 1985; Curran, 1977; Riggio, Throckmorton, & DePaola, 1990). It is often the case that socially anxious persons who participate in studies have complete knowledge that their behavior is being observed and possibly evaluated. When socially anxious persons realize that they are being observed and evaluated, their anxiousness tends to increase and they become more withdrawn (DePaulo et al., 1990). In this study subjects had no knowledge that they were being observed and the social skills of socially anxious subjects appeared similar to those of the nonanxious controls.

Because this study did not involve an explicit comparison of "waiting room" versus "role play" interactions, it cannot be concluded with certainty that the general lack of anxious-nonanxious differences in social skill is attributable to the more naturalistic waiting room methodology. However, this study is one of a growing number of studies suggesting that both the method of assessing social skills and the situation in which they are assessed may influence the eventual results (e.g., Bellack et al., 1979; Farrell, Mariotto, Conger, Curran, & Wallander, 1979; Greenwald, 1977). The impact of each of these variables on social skills assessments obviously warrants further empirical examination.

The most notable exception to the general lack of differences between anxious and nonanxious subjects on the measures of social skills was with subjects' self-evaluations. Anxious subjects rated their social skills much more negatively than nonanxious subjects. Analyses of partners' ratings of subjects' social skills suggest that perhaps the anxious subjects were unrealistically negative in their self-evaluations (cf. Curran, Wallander, & Fischetti, 1980; Rapee & Lim, 1992). There was a greater discrepancy between

self- versus partner-rated social skills for the socially anxious group (for whom the discrepancy was in a negative direction) than for the nonanxious group.

It should be noted that conversational partners did evaluate the social skills of socially anxious subjects more negatively than the nonanxious subjects, thus providing some support for the anxious subjects' negative views of their own skills. It is perplexing, however, that partners rated the socially anxious as lower in social skill than their nonanxious peers in the absence of any behavioral differences. Despite the fact that the behaviors assessed in this study have been clearly linked to perceptions of social skill (Conger & Farrell, 1981; Dillard & Spitzberg, 1984) and they all correlated with rejection from partners, it appears that partners must have focused on variables other than those assessed in this study when making these judgments.

The analyses of social skills and their relation to social anxiety highlight two important points. First, many of the traditional methods of studying communication behavior that involve subjects' knowledge of being observed may particularly enhance subjects' experience of anxiety. Consequently, these experimental procedures may disrupt anxious subjects' cognitions, emotions, and behaviors in such a way as to make them appear less socially skilled than they are in the absence of video cameras, microphones, and experimenters (Torgrud & Holborn, 1992). However, it should be pointed out that some studies in which subjects had knowledge of being observed produced results similar to those of the current investigation (e.g., Merluzzi & Biever, 1987; Rapee & Lim, 1992). Second, it appears that "social skills deficits" among the socially anxious are at least partly attributable to negative self-evaluation biases rather than to objective skills deficits. This highlights the importance of using different methods other than, or in addition to, self-reports when attempting to assess the social skills of socially anxious persons.

The nervous and withdrawn conversational style thought to be characteristic of socially anxious individuals led us to suspect that others would react to anxious persons with rejection and diminished behavioral involvement. However, after the 5-min unstructured interaction, partners appeared to react to anxious and nonanxious subjects similarly. Although Gurtman et al. (1990) observed a pattern of rejection toward the anxious, their study involved subjects watching a videotape of an actor portraying an anxious role. We are unaware of any studies, prior to this one, that have assessed the feelings and behavioral manifestations of rejection that others have toward the *socially* anxious following *actual interactions*.

Social anxiety was hypothesized to be associated with rejection from others in part because the socially anxious were thought to exhibit diminished social skills. Despite the nonsignificant association between social

anxiety and interpersonal rejection, the logic that poor social skills elicit rejection was supported strongly. Every social skill variable assessed in this study correlated negatively and significantly with rejection from partners, indicating that people react negatively to those who exhibit poor social skills and positively to others who appear socially skilled (see also Cole & Milstead, 1989; Riggio & Zimmerman, 1991). This suggests that, if there are contexts in which socially anxious persons exhibit disrupted skills, perhaps for those in which there is an obvious evaluative component—public speaking, a first date, or a job interview, for example—skills training to effectively handle these situations would help such individuals avert the potentially negative reactions of others. At the same time, the likelihood that socially anxious persons experience rejection from others in some contexts should be given serious consideration since this study was not sufficiently powered to conclusively support that null hypothesis. It is particularly possible that, after repeated exposures to socially anxious persons, people may increase their avoidance and rejection behaviors.

Despite the fact that rejection from others was not significantly associated with social anxiety, there was a strong positive relationship between loneliness and social anxiety. This hypothesized relationship was predicated largely on the assumption that anxious subjects exhibit problems with social skills that would consequently lead to rejection from others. Over extended periods of time, such a process could plausibly precipitate feelings of loneliness. However, the results of this study do not support either the interpersonal rejection or social skills deficits components of this equation. The analysis of  $H_2$  indicated that interpersonal rejection was not a significant outcome of interaction with socially anxious persons. The analysis of  $H_3$  indicated that, although social anxiety was a powerful predictor of loneliness, subjects' social skills were not significant predictors of loneliness. Thus the relationship between social anxiety and loneliness appears to be unrelated to subjects' social skills (cf. Zakahi & Duran, 1982).

Recently Solano and Koester (1989) observed a similar pattern of results related to social anxiety and loneliness. In this large-sample self-report study, both social anxiety and social skills significantly predicted loneliness. However, both were independent predictors of loneliness, and the effect size for anxiety was twice that for social skills. Those results, along with those of the present study, raise a perplexing question. What is it about socially anxious persons, if not their problematic social skills, that causes them to experience loneliness? It is possible that loneliness causes social anxiety, or perhaps some third variable, other than social skills, accounts for both phenomena. For example, socially anxious persons often feel that others hold standards for them that they cannot achieve (Wallace & Alden, 1991). Perhaps this diminished sense of self-efficacy causes a person to feel

socially anxious and lonely at the same time (Leary et al., 1986; Peplau, Russell, & Heim, 1979).

There are at least two important limitations that should be kept in mind when interpreting the results of this study, the first of which stems from problems associated with the comorbidity of social anxiety with depression. Measures of social anxiety are highly correlated with depression (Gotlib & Cane, 1989; Ingram, 1989). The same maladaptive cognitive patterns that underlie depression are also evident among those afflicted with anxiety (Barlow, 1991; Heimberg et al., 1989). It is therefore unclear if the pattern of results obtained was due to social anxiety, depression, or the interaction between the two states. It is interesting to note, however, that interpersonal rejection is a robust and reliable phenomenon associated with depression (Segrin & Dillard, 1992), yet the socially anxious subjects in this study elicited no more rejection than their nonanxious peers. This finding suggests that interpersonal rejection may be a phenomenon more specific to depression than anxiety (see also Dobson, 1989).

A second limitation of this study lies in the fact that the "waiting period" methodology may have diminished participants' motivation to interact. Although some authors consider motivation to be an important component of social skill (e.g., Spitzberg, 1983; Spitzberg & Cupach, 1989), anxious-nonanxious behavioral differences may not have emerged because the social situation may not have generated sufficient motivation for subjects to actively and extensively deploy the social behaviors in their repertoires.

In conclusion, the results of this investigation, when contrasted with those of earlier investigations, suggest that the way in which researchers study social anxiety and its relationship to social skills deficits (i.e., self-report measures of social skills, instructions to subjects, the presence of cameras in plain view, etc.) can influence the nature of the obtained results. Unlike many past investigations, the current study placed socially anxious subjects in a very unstructured social setting, with no knowledge of being observed and no instructions to guide their behavior, and assessed their social skills from multiple different perspectives. We further examined the extent to which these social skills may be associated with interpersonal rejection from others and loneliness. Some of our findings, such as the tendency for socially anxious persons to evaluate their own social skills negatively, are similar to those from studies in which subjects knew they were being observed and evaluated (e.g., Glasgow & Arkowitz, 1975; Rapee & Lim, 1992). Other findings, such as a lack of differences in behaviors or ratings from observers, differ from past investigations in which subjects had knowledge of being observed (e.g., Beidel et al., 1985; Cappella, 1985). This highlights the need for further investigation into the social skills of socially

anxious individuals to discover those phenomena that cut across differing methods of experimental structuring and social skill assessment, versus those that are specific to particular procedures. There remains a particular need to study further social anxiety in those social situations that more closely approximate everyday situations. In addition, there is an obvious need to explore further the mechanisms that so strongly link social anxiety with the problem of loneliness.

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